

Composite Blanket Elements for CTA, Phase I

Completed Technology Project (2018 - 2019)



Project Introduction

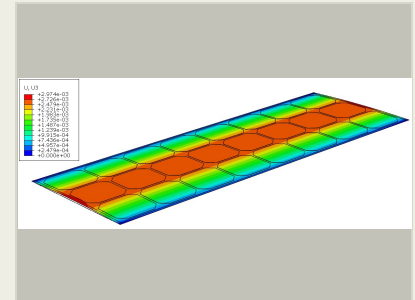
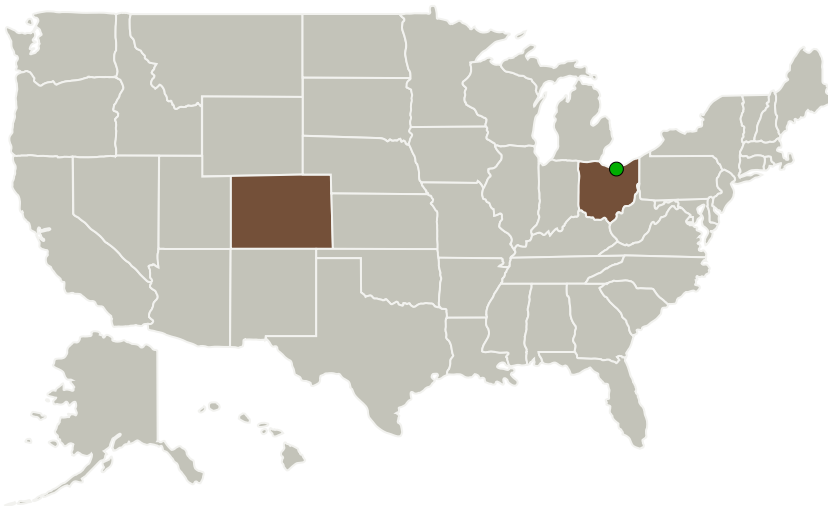
Opterus Research and Development, Inc. proposes to develop solar array blanket technologies suitable for solar electric propulsion (SEP) missions. The technologies will address NASA's needs for increased power, modularity to reduce cost, high voltage operation, and operation in a SEP environment. The work will further enable high reliability and compact stowage in a design that provides sufficient stiffness to minimize adverse spacecraft dynamics issues.

Anticipated Benefits

The proposed technologies are applicable to all blanket solar arrays. Blanket solar arrays have emerged as the leading contender for moderate to high-power missions and even low power missions due to their mass efficiency and small stowed volume. NASA has several missions under consideration that use electric propulsion and require high power solar arrays. It is a key technology for NASA's long-term Mars objectives, both getting to Mars with SEP and providing power as a Mars surface solar array.

The proposed technologies are applicable to a broad range of non-NASA missions. GEO communications and radar platforms require power levels exceeding 20 kW and blanket solar arrays are often considered. Other than the specializations required for SEP, the requirements for the proposed technologies overlap with the needs of high power communications system. Both systems require high reliability, compact stowage, low cost, and light weight

Primary U.S. Work Locations and Key Partners



Composite Blanket Elements for CTA, Phase I

Table of Contents

Project Introduction	1
Anticipated Benefits	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	3
Technology Areas	3
Target Destinations	3

Composite Blanket Elements for CTA, Phase I

Completed Technology Project (2018 - 2019)



Organizations Performing Work	Role	Type	Location
Opterus Research and Development, Inc.	Lead Organization	Industry	Fort Collins, Colorado
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations

Colorado

Ohio

Project Transitions

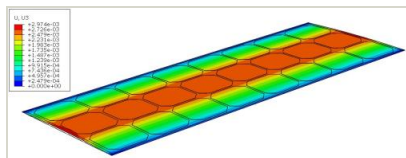
▶ **July 2018:** Project Start

✓ **February 2019:** Closed out

Closeout Documentation:

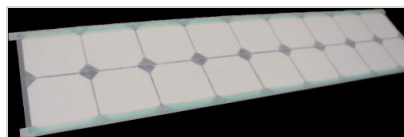
- Final Summary Chart(<https://techport.nasa.gov/file/140983>)

Images



Briefing Chart Image

Composite Blanket Elements for CTA, Phase I
(<https://techport.nasa.gov/image/129690>)



Final Summary Chart Image

Composite Blanket Elements for CTA, Phase I
(<https://techport.nasa.gov/image/128075>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Opterus Research and Development, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Thomas Murphey

Co-Investigator:

Thomas Murphey

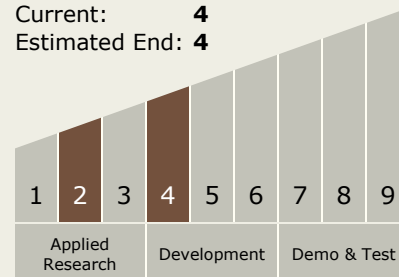
Composite Blanket Elements for CTA, Phase I

Completed Technology Project (2018 - 2019)



Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.1 Power Generation and Energy Conversion
 - └ TX03.1.1 Photovoltaic

Target Destinations

The Moon, Mars